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Paper 93  
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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**Advanced Research and Technology Institute, Inc.**  
Junior Party  
(U.S. Patent Applications 08/948,764, 08/955,572 and 10/027,199).

v.

**Immunex Corporation**  
Senior Party  
(U.S. Patent 7,211,259),

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Patent Interference No. 105,662 (MPT)  
(Technology Center 1600)

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1 Decision – Priority Date – Bd.R. 125(a)

2  
3 Before: RICHARD TORCZON, SALLY GARDNER LANE, and MICHAEL P.  
4 TIERNEY, *Administrative Patent Judges*.  
5  
6 TIERNEY, *Administrative Patent Judge*.  
7

1    I.    Introduction

2       This interference is before a merits panel for a decision on priority motions  
3       regarding Count 1, the sole count in interference. Generally, Count 1 is directed to  
4       polypeptides, H4-1BB, and DNA sequences encoding the polypeptides. H4-1BB  
5       polypeptide is now recognized as a member of the tumor necrosis factor (TNF)  
6       receptor super-family. (AX 2002, 2:46-51).

7       Both parties filed motions for judgment on priority of invention, Immunex  
8       Motion for Priority (Paper 86) and ARTI Motion for Priority (Paper 83). The  
9       parties however, have entered into a settlement agreement whereby neither party  
10      filed an opposition or reply and neither party cross-examined their opponent's  
11      witnesses. (Order, Paper 89). As such, the parties' priority motions are  
12      unopposed.

13      ARTI is junior party in the interference and bears the burden of proving  
14      priority of invention. This burden exists even when the motion is not opposed.

15      ARTI's motion for priority alleges that ARTI was the first to have conceived  
16      and actually reduced to practice the subject matter of Count 1. (Paper 83, 1:13-23).  
17      Additionally, ARTI appears to allege conception combined with diligence to a later  
18      reduction to practice as ARTI states as fact that its inventor, Dr. Kwon, worked  
19      diligently on his H4-1BB project up until the time it was constructively reduced to  
20      practice. (*Id.*, 17:20-22).

21      Based on the record presented, we hold that ARTI has presented sufficient  
22      and credible evidence that it conceived an embodiment within the scope of Count 1  
23      prior to Immunex's accorded priority benefit date. ARTI however, has failed to  
24      establish that tests were conducted to demonstrate that its H4-1BB compounds  
25      worked for a specific and practical utility. Additionally, ARTI has failed to  
26      demonstrate diligence to a later reduction to practice as ARTI did not identify a

1 sufficient daily/weekly/monthly timeline of events regarding the work on its H4-  
2 IBB project. Accordingly, we enter judgment on priority of invention against  
3 junior party ARTI.

4

5 II. Findings of Fact

6 The record supports, by a preponderance of the evidence, the following  
7 findings:

8 A. Accorded Priority Benefit

9 1. Junior Party ARTI

10 1) ARTI is accorded an earlier constructive reduction to practice  
11 (i.e., benefit for the purpose of priority) of U.S. Application 08/122,796, filed  
12 **September 16, 1993.** (Decision, Paper 80, 5).

13

14 2. Senior Party Immunex

15 2) Immunex has been accorded an earlier constructive reduction to practice  
16 (i.e., benefit for the purpose of priority) of U.S. Application 08/060,843, filed **May**  
17 **7, 1993.** (*Id.* at 6).

18

19 C. The Count and Claim Correspondence

20 3) There is a single count in the interference, Count 1, which reads as follows:

21 A compound according to claims 7 or 16 of U.S. Patent 7,211,259 or  
22 according to claim 24 of U.S. Application 08/955,572 or claim 1 of  
23 U.S. Application 10/027,199.

24

25 (Paper 1, p. 4).

26

27 4) Generally, the claims identified in Count 1 relate to polypeptides for human

1 4-1BB (ARTI SEQ ID NO: 2 and Immunex SEQ ID NO: 8) and DNA sequences  
2 encoding the polypeptides. For example, claim 16 of Immunex '259 and claim 24  
3 of ARTI '572 form a part of Count 1 and read as follows:

4  
5 16. A purified polypeptide selected from the group consisting of  
6 polypeptides comprising amino acids 1-163 of SEQ ID NO: 8 and  
7 polypeptides comprising a fragment of amino acids 1-163 of SEQ ID  
8 NO: 8, the fragment being capable of binding a 4-1BB-L.

9  
10 24. A purified soluble H4-1BB polypeptide, wherein said polypeptide  
11 comprises the extracellular domain of SEQ ID NO: 2 or a fragment of  
12 the extracellular domain which is capable of specifically binding a cell  
13 membrane ligand for SEQ ID NO: 2.

14  
15 5) Amino acids 1-163 of Immunex SEQ ID NO: 8 and amino acids 24-186 of  
16 ARTI SEQ ID NO: 2 represent the extracellular domain portion of H4-1BB.  
17 (Declaration of Nigel Killeen, IX 1015, ¶¶ 14 and 44).

18  
19 6) The claims of the parties are:

20 Immunex '259: 1-19  
21 Advanced Research and Technology Inst. '572: 5-6, 24, 26 and 27-31  
22 Advanced Research and Technology Inst. '764: 19-24 and 26-36  
23 Advanced Research and Technology Inst. '199: 1-3 and 19-23  
24 (Declaration, Paper 1, p. 4).  
25

26 7) The claims of the parties which correspond to Count 1 are:

27 Immunex '259: 1-2 and 6-19  
28 Advanced Research and Technology Inst. '572: 5-6, 24 and 26-31  
29 Advanced Research and Technology Inst. '764: 19-24, 26 and 28-36  
30 Advanced Research and Technology Inst. '199: 1, 19 and 21-23  
31 (*Id*).  
32

1    8) The claims of the parties which do not correspond to Count 1, and therefore  
2 are not involved in the interference, are:

Immunex '259:	3-5
Advanced Research and Technology Inst. '572:	None
Advanced Research and Technology Inst. '764:	27 <sup>1</sup>
Advanced Research and Technology Inst. '199: ( <i>Id.</i> )	2, 3 and 20

ARTI's Priority Evidence

10 9) ARTI's priority motion relies upon testimony from three declarants:  
11 i) Dr. Byoung S. Kwon, the sole named inventor of ARTI's involved  
12 applications (AX 2107);  
13 ii) Dr. Kack Kyun Kim, a visiting scientist in Dr. Kwon's laboratory  
14 (AX 2122); and,  
15 iii) Dr. James L. Riley, a person of ordinary skill in the art at the time of the  
16 invention who testifies as to how one skilled in the art would interpret Dr. Kwon  
17 and Dr. Kim's laboratory notebooks (Riley Declaration AX 2117, Laboratory  
18 notebooks, including AX 2126).

## *Conception*

21 10) Dr. Kwon testifies that, in the 1980's, he was searching for new ways to treat  
22 human diseases associated with the immune system. (AX 2107, ¶ 5).  
23  
24 11) Dr. Kwon testifies that he was the first person to isolate and sequence mouse  
25 4-1BB. (*Id.*, ¶ 5).

<sup>1</sup> 764 claim 27 depends from previously cancelled claim 25.

1   12) Dr. Kwon testifies that he performed experiments on mouse 4-1BB and  
2   determined that it was a T-lymphocyte mediator and that he recognized the  
3   potential importance of a T-lymphocyte inducible gene product, such as 4-1BB, in  
4   the regulation of the immune system. (*Id.*, ¶¶ 6, 10-11).

5

6   13) Dr. Kwon states that by mid-1990 he was pursuing the human homologue of  
7   mouse 4-1BB. (*Id.*, ¶ 13).

8

9   14) Dr. Kwon testifies that in 1991-92 he had a large laboratory with many  
10   scientists and that Dr. Kim worked in his lab as a visiting scientist from Korea.  
11   (*Id.*, ¶ 36).

12

13   15) Dr. Kwon states that he appreciated in 1991-92 that H4-1BB was a receptor  
14   protein and that the portion residing outside the cell membrane, the extracellular  
15   domain, was important to its function and that the H4-1BB ligand likely bound the  
16   H4-1BB extracellular domain. (*Id.*, ¶ 40).

17

18   16) Dr. Kwon testifies that he was excited to have Dr. Kim arrive in winter 1991  
19   as Dr. Kwon was eager to begin working on expression of the human 4-1BB ("H4-  
20   1BB") protein and that he wanted Dr. Kim to prepare a construct for making a  
21   fusion protein comprising the extracellular domain of H4-1BB. (*Id.*, ¶¶ 36-38).

22

23   17) Dr. Kwon testifies that Dr. Kim worked in the laboratory from December 20,  
24   1991 until January 16, 1992 and that while at the laboratory Dr. Kim used bacterial  
25   human 4-1BB cDNA producing clones to help generate a H4-1BB fusion protein  
26   containing the H4-1BB extracellular domain. (*Id.*, ¶ 39).

1    18) According to Dr. Kwon, on January 7, 1992 he wrote down on a notepad  
2 page (AX 2126) the specific primers to be used to amplify portions of H4-1BB  
3 cDNA from full length H4-1BB. (AX 2107, ¶ 42).

4

5    19) Dr. Kwon states that he instructed Dr. Kim to utilize the PCR product  
6 obtained from the specific forward and reverse H4-1BB primers to begin  
7 constructing the H4-1BB fusion protein that contained the H4-1BB extracellular  
8 domain. (*Id.*, ¶ 48).

9

10   20) According to Dr. Kwon, Dr. Kim produced the requested H4-1BB fusion  
11 protein as evidenced by Dr. Kim's notebook page dated January 15, 1992, which  
12 Dr. Kwon recognizes as containing Dr. Kim's handwriting (AX 2125). (AX 2107,  
13 ¶ 49).

14

15   21) Dr. Kim testifies that he visited Dr. Kwon's laboratory from December 20,  
16 1991 to January 16, 1992 and while there he worked on making a fusion protein  
17 comprising the extracellular domain of H4-1BB. (AX 2122, ¶¶ 8-12).

18

19   22) According to Dr. Kim, prior to his arrival, Dr. Kwon's laboratory had  
20 already isolated, sequenced, inserted into a cloning vector and transferred H4-1BB  
21 cDNA to bacteria. (*Id.*, ¶ 9).

22

23   23) Dr. Kim testifies that he is familiar with Dr. Kwon's handwriting and that  
24 AX 2126 reflects Dr. Kwon's handwriting and depicts the specific PCR primers for  
25 amplifying portions of H4-1BB cDNA from the bacterial clones maintained in Dr.  
26 Kwon's lab. (*Id.*, ¶ 13).

1 24) Dr. Kim testifies that AX 2125 is a true and accurate copy of his laboratory  
2 notebook pages where he recorded his experiments while visiting Dr. Kwon's lab  
3 in December 1991 to January 1992 and that as indicated by the notebook, he  
4 utilized Dr. Kwon's PCR primers to begin constructing the H4-1BB fusion protein.  
5 (*Id.*, ¶ 16).

6  
7 25) Dr. Kim testifies that the cloning was successful and that the vector was later  
8 inserted into an expression vector that produced the H4-1BB protein. (*Id.*, ¶ 19).

9  
10 26) Dr. Riley testifies that, given the universe of possible primer sequences, the  
11 specific primers identified in Dr. Kwon's handwritten note (AX 2126) leads to the  
12 inescapable conclusion that Dr. Kwon had previously isolated the full-length H4-  
13 IBB cDNA sequence and possessed the complete nucleic sequence encoding H4-  
14 IBB by at least January 7, 1992. (AX 2117, ¶¶ 31 and 41-44).

### *Actual Reduction to Practice*

17 27) Dr. Kwon provides the following testimony regarding his testing of the H4-  
18 1BB extracellular domain and H4-1BB cDNA:

19 . 50. After cloning human 4-1BB, I used human 4-1BB cDNA to  
20 study transcription of human 4-1BB in T-cells.

21           51. After cloning human 4-1BB, I used human 4-1BB protein to  
22 generate antibodies selective for the extracellular domain of human 4-  
23           1BB.  
24

25           52. After cloning human 4-1BB, I used the APtag fusion protein to  
26           conduct human 4-1BB ligand binding studies.  
27

29 (AX 2107, ¶ 50-52).

## *Diligence*

2 28) Dr. Kwon provides the following testimony regarding his diligence towards  
3 filing his '796 application on September 16, 1993:

7           54. In the winter of 1992-1993, I and other members of my  
8 laboratory began drafting a manuscript that was submitted to  
9 Immunology Letters on October 12, 1994. The manuscript includes a  
10 discussion of our isolation of human 4-1BB cDNA.  
11

13 (AX 2107, ¶ 53-54).

### 15 III. Opinion

16 An interference is a procedure to determine who among competing parties  
17 was the first to invent a commonly claimed invention. 35 U.S.C. §§ 102(g) and  
18 135(a). The commonly claimed invention in interference is generally directed to  
19 purified H4-1BB polypeptides and DNA sequences encoding the polypeptides  
20 where the polypeptides comprise the H4-1BB extracellular domain.

21 Both parties have filed motions for judgment on priority of invention. ARTI  
22 being the junior party in interference bears the burden of proving priority of  
23 invention by a preponderance of the evidence. 37 C.F.R. § 41.207(a).

Generally, a party may demonstrate that it was first to invent by establishing either (1) an earlier date of reduction to practice, or (2) an earlier date of conception, but a later date of reduction to practice, coupled with a reasonable diligence to a reduction to practice from (a) a time prior to the opponent's conception until (b) the party's reduction to practice is achieved. *Eaton v. Evans*, 204 F.3d 1094, 1097 (Fed. Cir. 2000); *Mahurkar v. C. R. Bard, Inc.*, 79 F.3d 1572,

1 1577 (Fed. Cir. 1996). ARTI's motion for judgment on priority alleges earlier  
2 reduction to practice and appears to allege an earlier date of conception with  
3 diligence to a later reduction to practice. (Paper 83, 1:13-23 and 17:20-22). We  
4 analyze ARTI's contentions below and, for reasons of convenience, begin with  
5 ARTI's alleged conception.

6

#### A. Conception

## 1. Legal Principles

9       Conception is the formation, in the mind of the inventor, of a definite and  
10 permanent idea of the complete and operative invention, as it is thereafter to be  
11 applied in practice. *Cooper v. Goldfarb*, 154 F.3d 1321, 1327 (Fed. Cir. 1998).  
12 The Federal Circuit has indicated that one way to distinguish a “bare hope” from a  
13 “complete conception” is to focus “on whether the inventors had a reasonable  
14 expectation that they would produce the claimed invention.” *Hitzeman v. Rutter*,  
15 243 F.3d 1345, 1358 (Fed. Cir. 2001). Furthermore “[c]onception of a substance  
16 claimed *per se* without reference to a process requires conception of its structure,  
17 name, formula, or definitive chemical or physical properties.” *Fiers v. Revel*, 984  
18 F.2d 1164, 1169 (Fed. Cir. 1993).

19 Because conception is a mental act, an inventor's testimony, standing alone,  
20 is insufficient -- some form of corroboration must be shown. *Price v. Symsek*, 988  
21 F.2d 1187, 1194 (Fed. Cir. 1993). We apply a "rule of reason" analysis to  
22 determine whether the inventor's prior conception testimony has been  
23 corroborated.

24

1 ARTI has demonstrated that Dr. Kwon conceived of an embodiment within  
2 the scope of Count 1 by no later than January 15, 1992. Specifically, the count  
3 encompasses a purified polypeptide comprising the extracellular domain of H4-  
4 1BB. Dr. Kwon testifies that by mid-1990 he was pursuing the human homologue  
5 of mouse 4-1BB. (AX 2107, ¶ 13). Dr. Kwon testifies that he appreciated in  
6 1991-92 that H4-1BB was a receptor protein and that the portion residing outside  
7 the cell membrane, the extracellular domain, was important to its function. (*Id.*,  
8 ¶ 40). Dr. Kwon further testifies that he instructed a visiting scientist, Dr. Kim, to  
9 prepare a construct for making a fusion protein comprising the extracellular  
10 domain of H4-1BB using specific primers Dr. Kwon had identified. (*Id.*,  
11 ¶¶ 36-38). Dr. Kwon's testimony is consistent with his contemporaneous notes  
12 and is corroborated by Dr. Kim's testimony (AX 2122). Dr. Kim testifies that he  
13 produced the requested H4-1BB fusion protein as is evidenced by Dr. Kim's  
14 notebook page dated January 15, 1992 (AX 2125). Dr. Riley testifies that a person  
15 of ordinary skill in the art would have understood that Dr. Kwon had isolated the  
16 full length H4-1BB cDNA and possessed the complete nucleic acid sequence  
17 encoding H4-1BB by at least January 7, 1992. (AX 2117, ¶¶ 31 and 41-44).  
18 Based on the evidence presented we hold that ARTI has presented corroborated  
19 evidence of a conception of an embodiment within the scope of Count 1 by no later  
20 than January 15, 1992.

21

1           B.     Actual Reduction to Practice

2           ARTI contends that Dr. Kwon reduced the entire H4-1BB nucleotide  
3 sequence to practice by no later than December 20, 1991 and that this constitutes  
4 an actual reduction to practice of the Count. (Paper 83, 1:14-15 and 25:9-11).  
5 Further, as an alternative, ARTI contends that Dr. Kwon reduced the invention to  
6 practice by no later than January 15, 1992. (*Id.*, 25: 22-23).

7

8           1.     Legal Principles

9           Whether an actual reduction to practice has been achieved is a question of  
10 law which is resolved on the basis of underlying facts. *Estee Lauder, Inc. v.*  
11 *L'Oreal*, S.A., 129 F.3d 588, 592 (Fed. Cir. 1997). Specifically, in an interference  
12 proceeding, a party seeking to establish an actual reduction to practice must satisfy  
13 a two-prong test: (1) the party constructed an embodiment that met every limitation  
14 of the interference count, and (2) the embodiment operated for its intended  
15 purpose. *Eaton*, 204 F.3d at 1097. As to the second prong, there must be some  
16 recognition of successful testing prior to the critical date for an invention to be  
17 reduced to practice. Thus, an actual reduction to practice “does not occur until an  
18 inventor, or perhaps his agent, knows that the invention will work for its intended  
19 purpose.” *Estee Lauder* at 593. Furthermore, evidence of any utility is sufficient  
20 when the count does not recite any particular utility. *Nelson v. Bowler*, 626 F.2d  
21 853, 856 (CCPA 1980).

22

23           2.     ARTI Has Failed to Present Sufficient Evidence of Successful  
24           Testing to Demonstrate its H4-1BB Operated for a Practical  
25           Utility

26

27           ARTI contends that Dr. Kwon’s isolation and purification of the entire

1 nucleotide sequence encoding H4-1BB represents an actual reduction to practice of  
2 Count 1. (Paper 83, 25:9-11). ARTI also contends that Dr. Kwon had reduced the  
3 invention to practice by January 15, 1992, when Dr. Kim had made the fusion  
4 protein that contained the extracellular portion of the H4-1BB polypeptide. (Paper  
5 83, 25:22-23).

6 ARTI has failed to demonstrate with credible and corroborated evidence that  
7 its H4-1BB polypeptide or H4-1BB cDNA was shown to work for a particular  
8 utility. Specifically, ARTI has not provided evidence of successful testing prior to  
9 the critical date that establishes that the H4-1BB polypeptide or cDNA worked for  
10 a practical utility and that the utility was recognized and appreciated.

11 ARTI citation of Dr. Kim's production of a fusion protein containing the  
12 H4-1BB extracellular domain also fails to demonstrate an actual reduction to  
13 practice of the invention. The formation of a fusion protein containing the H4-  
14 1BB extracellular domain does not, by and of itself, establish an appreciation and  
15 recognition of successful testing for a practical utility. Cf., *Cross v. Iizuka*, 753  
16 F.2d 1040, 1044 (Fed. Cir. 1985)(pharmacological activity for a compound of the  
17 count rather than the mere existence of the compound itself was necessary to  
18 establish practical utility).

19 Additionally, Dr. Kwon testifies that after cloning the H4-1BB he used  
20 cDNA to study transcription of human 4-1BB in cells, generated antibodies  
21 selective for the H4-1BB extracellular domain and conducted H4-1BB ligand  
22 binding studies. (AX 2107, ¶¶ 50-52). ARTI however, does not identify evidence  
23 to corroborate Dr. Kwon's testimony regarding these experiments, the success or  
24 failure of the experiments or identify the dates the experiments were conducted.  
25 We hold that there is insufficient evidence of record to support ARTI's alleged  
26 actual reduction to practice.

1           C. Diligence

2           ARTI states that after the successful cloning of H4-1BB, Dr. Kwon  
3           continued to work diligently on his H4-1BB project up until the time he filed the  
4           ‘796 application on September 16, 1993. (Paper 83, 17:14-22).

5

6           1. Legal Principles

7           The reasonable diligence standard “balances the interest in rewarding and  
8           encouraging invention with the public’s interest in the earliest possible disclosure  
9           of innovation.” *Griffith v. Kanamaru*, 816 F.2d 624, 626 (Fed. Cir. 1987). Merely  
10          asserting diligence is not enough, the party chargeable with diligence must account  
11          for the entire period during which diligence is required, or provide a compelling  
12          reason to excuse the failure to take action. *Id.* at 626. Testimonial evidence by the  
13          inventor or inventors must be adequately corroborated. If documentary evidence is  
14          relied on to establish reasonable diligence, it must show specific acts at specific  
15          times directed towards an actual or constructive reduction to practice of the  
16          invention of the count. *Naber v. Cricchi*, 567 F.2d 382, 386 (CCPA 1977).

17

18          2. ARTI Has Failed to Provide Sufficient Evidence of Diligence  
19           For the Entire Period During Which Diligence Was Required

20

21          Dr. Kwon states that he was diligently working on his H4-1BB projects up  
22          until the ‘796 application was filed. Dr. Kwon however, does not provide specific  
23          details regarding his H4-1BB activities up until September 1993 other than  
24          generally state that during the winter of 1992-93 he began drafting a manuscript  
25          that discussed the isolation of H4-1BB cDNA. Even if Dr. Kwon’s manuscript  
26          work were corroborated and accounted for the entire winter of 1992-93, Dr.

1 Kwon's manuscript work does not establish diligence towards a reduction to  
2 practice from spring 1993 until his constructive reduction to practice in September  
3 1993. Additionally, although Dr. Kwon generally states that he studied H4-1BB in  
4 t-cells, generated antibodies and studied H4-1BB ligand binding, Dr. Kwon does  
5 not identify dates for these activities nor identify corroborating evidence to support  
6 his testimony on these points. We hold that ARTI has failed to provide a sufficient  
7 showing of corroborated acts at specific times over the entire period for which  
8 ARTI was accountable.

9

10 IV. Conclusion

11 We hold that there is insufficient evidence of record to establish that ARTI  
12 had an earlier actual reduction to practice or had an earlier date of conception  
13 coupled with reasonable diligence towards its constructive reduction to practice on  
14 September 16, 1993. We deny junior party ARTI's motion for priority and we  
15 dismiss senior party Immunex's motion for priority as moot. Judgment on priority  
16 will be entered concurrent with this decision in a separate paper against junior  
17 party ARTI.

18

19 V. ORDER

20 Upon consideration of the motions, and for the reasons given, it is:

21 **Ordered** that ARTI Motion for Priority is denied.

22 **Further Ordered** that Immunex Motion for Priority is dismissed.

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